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MONTHLY REVIEW

AN INDEPENDENT SOCIALIST MAGAZINE

**WHAT EVERY AMERICAN
SHOULD KNOW ABOUT
SUEZ**

VOL. 8

6

A New Feature

THE WORLD OF SCIENCE

PHILIP MORRISON

EDITORS . . . LEO HUBERMAN . . . PAUL M. SWEEZY

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NOTES FROM THE EDITORS

We are proud to present in this issue the first article by MR's new science "columnist." Professor Philip Morrison is one of the country's leading theoretical physicists, and we believe that he comes as close as any American to attaining the unattainable status of an all-around scientist. In sending us the manuscript, Professor Morrison writes that he is "not sure it is what MR readers want." Neither are we: only MR readers themselves can provide that information. So please do. Professor Morrison is as anxious as we are to make this new feature of maximum interest and usefulness to all of you. We will pass your communications along to him, and he will take full account of them in planning his future columns. Don't hesitate to ask questions and to suggest topics you would like to have him discuss and explore.

The annual Monthly Review Associates appeal went out at the beginning of September, somewhat earlier than in the past. At this writing, MRA's keeper of the purse gives us the good news that returns are running seven percent better than last year, and as usual we have had numerous heart-

(continued on inside back cover)

WHAT EVERY AMERICAN SHOULD KNOW ABOUT THE SUEZ CRISIS

A history of the world during the last century might well start and end with the Suez Canal.

It was in 1854 that the French engineer-promoter Ferdinand de Lesseps launched the project which led to the actual construction of the Canal (the *idea* of a canal across Egypt was, of course, much older). The first ships passed through on November 17, 1869. In 1888, the Great Powers drew up a treaty which has since remained the basis of the Canal's status in international law. The "big ditch" was crucial to the vast system of European imperialism which grew up after 1870. It played an important role in both world wars. It took on a new significance with the fantastic post-World War II development of the oilfields of the Middle East. And now, both materially and symbolically, it stands at the very center of the backward countries' struggle for political independence and economic development.

In one sense it would be easy to write a book about the Suez Canal, though it might be hard to confine it to one volume. In no sense is it easy to select and condense into one brief article the material needed for an understanding of the crisis which has flared up over the Canal in the last two months. Readers will therefore understand why what follows has the character of disjointed notes rather than of a systematic survey, and they may perhaps be more tolerant than usual of errors of emphasis and omission.

The Hypocrisy of Imperialism

It is perhaps a measure of progress that human beings can no longer admit, let alone boast, that they exploit each other for the sake of profit and power. Everything the exploiters do is for the good of their victims; everything the exploited do—aside from keeping quiet and working hard—is a manifestation of ingratitude or perversity. No incident of modern times illustrates the all-pervasive hypocrisy of imperialism more clearly than the Suez crisis.

We are told that President Nasser of Egypt, who nationalized the Suez Canal on July 26th, is an evil, power-hungry dictator. Britain, thunders Sir Anthony Eden, has no quarrel with the Egyptian people but with one man only who is jeopardizing Egypt's future for his own malign purposes. And *Le Populaire*, organ of French Premier Mollet's Socialist Party, agrees: the whole problem, it says, "arises from the

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vile vengefulness of an ulcerated apprentice dictator." The ghosts of Hitler and Munich are constantly evoked: the appetite of a dictator is insatiable—appeasement never pays.

Nasser is a dictator all right, and on occasion he practices most of the dirty tricks of his trade. But he didn't get that way on July 26th, and anyone who can calmly swallow a Chiang Kai-shek, a Syngman Rhee, and a Francisco Franco has no excuse for gagging on a Nasser. Moreover, it is ludicrous to compare Egypt, a third-rate military power which was but recently soundly trounced by little Israel, with Nazi Germany: Munich, as a perceptive French commentator recently remarked, is *not* on the Nile.

No, all this talk about dictators and Munichs and appeasement is the purest kind of eyewash. Not so long ago, Washington and London and Paris looked with favor on the Nasser regime. They believed, as Hanson Baldwin put it in the *New York Times* of September 9th, that he was "a stabilizing factor in the Middle East." As recently as the spring of this year, they offered to lend him, directly and through the International Bank, hundreds of millions of dollars for the huge Aswan Dam project. The trouble with Nasser, in the eyes of the Western statesmen, is not that he is a dictator, but that he refused to toe their line in international affairs.

Nasser's greatest crime, of course, was the purchase of arms from Czechoslovakia. A "stabilizing factor" must buy guns and tanks and planes only from approved sources. Still there were those in the Western capitals who thought the Egyptian dictator could be brought around with dollars and pounds sterling—hence the Aswan Dam offer. Since Nasser stuck to his neutralist course, however, and since he quite naturally continued to encourage and support the Algerians in their struggle for independence from France, the hope that he could be bought up seems to have faded. The Aswan Dam offer was the last effort in that direction, and as Nasser hesitated whether or not to accept the financial conditions that went with it, the attitude of the Western allies hardened. Finally, the decision was taken, apparently with Washington in the lead, to precipitate a showdown—to attempt to *force* Nasser either into line or out of office. That this was indeed the Western intent is proved by the otherwise inexplicable fact that the occasion for striking a blow at Nasser was precisely his *acceptance* of the conditions attached to the Aswan loan offer. It was only then that Washington, followed closely by London, announced that the offer itself was being withdrawn.

Nasser reacted by nationalizing the Suez Canal Company. In so doing, he was far from committing an act of aggression. On the contrary, he was fighting back by the only means available to him against a campaign launched by three of the most powerful countries

in the world to undermine his country's independent foreign policy and to destroy his own political life.

In similar circumstances, the purest of democrats could hardly have acted differently. And he would have evoked the same howls of anger and frustration from the self-appointed leaders of the "free world"—with the sole difference that the hypocrisy would have been suitably tailored to fit the altered conditions of the case.

The "evil dictator" pretense is not the only kind of hypocrisy involved in the Suez crisis. There is also, for example, the lament for the "poor Egyptian people," feelingly if somewhat pompously expressed by the *New York Times* in an editorial entitled "The Suez and the People" (August 26). "How do the Egyptian people themselves and some of their neighbors stand to come out of the dispute?" asks the *Times*, and goes on to answer:

They are in desperate need. Their poverty is beyond our comprehension. Their health situation is such that one of our greatest medical men recently said that in general—and in respect to endemic disease in particular—Egypt was one of the worst spots in the world. Ignorance is the accepted norm, not the lamentable exception. . . . Egypt needs the Aswan Dam as a part of [a] great campaign for betterment. More than that it needs the international economic and moral credit to make such a project and many others possible. The arbitrary action on Suez, following the flirtation with the Communists, has gravely impaired that credit. For that reason Colonel Nasser has hurt rather than helped his country. The damage must be repaired, not to save Colonel Nasser's face, but to save the lives of Egyptians.

Such generous sentiments doubtless do credit to their author. But it might be well to look a little more deeply into the matter—to ask how the Egyptian people happened to get into their present deplorable state and how much benefit "international economic and moral credit" brought them when presumably they had plenty of it. Have the Western powers, which chide Nasser for neglecting his people, played such a constructive and honorable role in the past that they can now afford to read lectures to the Egyptian dictator? Listen to the considered view of G.W.F. Hallgarten, whose monumental work, *Imperialismus vor 1914*, is undoubtedly the most thorough socio-historical study of imperialism that has yet been written. He is talking about the futility of liberal reform in the pre-World War I period:

Just as pacifist ideology could not conceal the nature of armament policies, so liberal cant was powerless to efface the im-

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pression that England was an evil robber state even in the heyday of capitalism. Look what happened in Egypt!

Since 1863, one loan after another was "granted" [to Egypt], always under the most burdensome conditions. . . . To insure payment of interest and amortization, the fellah was squeezed dry though this was not, nor was it intended to be, enough to prevent the state from going bankrupt. After the land had been plundered, Disraeli drew up the balance sheet. His Commission de la Dette Publique Egyptienne stepped in as receiver. "In 1878 the Tschifliks, the estates of the Vice-regal family, amounting to 431,000 acres, were transformed into state lands and mortgaged to the European capitalists as security for the state debt. The Daira estates, private property of the Khedive, situated mostly in Upper Egypt and comprising 485,131 acres, suffered a similar fate; later they were sold to the consortium. A large part of the remainder of the country's landed property likewise fell into the hands of capitalist companies, and especially the Suez Company. The religious estates of the mosques and schools were confiscated by England to pay for the costs of the occupation."*

The using up of the poor peoples of the colonial countries, as in the case of Egypt, is always the presupposition of capitalism on an imperialist basis; on the labor of the fellaheen who built the great irrigation dams and cultivated the cotton fields rests the production of the modern English textile industry. Alongside exploitation through political force as in Egypt, of annihilation through machine production as in India, of robber war and the violent seizure of the treasures of the earth as in the Boer War, we have the snatching of land by settlers as in Kenya Colony—not to forget the plundering of Ireland whose population, owing to the oppressive rule of English landlords and the choking of national Irish industry, fell victim to famine and were forced to emigrate, with the result that during the 60 years prior to 1914 their numbers dropped from eight to four million. (Vol. I, pp. 70-71.)

An old story, we shall be told. But is it? Egypt remained a British colony in fact if not in name right up to the conclusion of the treaty providing for the evacuation of the Suez base in 1954; and all students of the Egyptian economy agree that per capita income has been steadily declining since long before World War II. Whatever allocation of responsibility one may care to make between the imperial overlords and the native ruling classes—and both certainly must bear their share—one thing is sure: the Egyptian people have no reason

* Hallgarten's footnote reference here, with no specific page citation, is to Adolf Hasenclever, *Geschichte Aegyptens im 19 Jahrhundert* (1917), and W. Scawen Blunt, *Secret History of the English Occupation of Egypt* (1923).

to expect anything from "economic and moral credit" emanating from the centers of Western imperialism. The *Times* can save its tears for less experienced victims.

But what about the more practical arguments for international control over the Canal? Are they at least free of the hypocrisy that so pervades the ideological and humanitarian claims and pretenses of the imperialists? Hardly. Take, for example, the contention that Egypt cannot be trusted to abide by the clauses of the 1888 treaty providing for perpetual freedom to all countries to use the Canal under conditions of peace and war alike, the clear implication being that the Western powers *can* be trusted to uphold the principle of unrestricted freedom of navigation. What a laugh! During two world wars, the Western powers closed the Canal to enemy shipping, in clear violation of the 1888 treaty. And during the last few years, they have acquiesced by the feebleness of their protests and their complete inaction at Egypt's closing the Canal to Israeli shipping. The fact is that no one who counts believes in or can be relied on to practice the completely free and unrestricted use of the Canal under all conditions. But by the same token, no one, and least of all the British and the French, is prepared to say so and to state their case frankly in terms of their own interests. To do that would necessitate admitting equally frankly the magnitude and legitimacy of Egyptian interests. It is easier to argue in terms of universal principles.

Or take the claim that the Egyptians are incapable of maintaining and operating the Canal without the cooperation of specialized foreign personnel such as pilots and engineers. This may well be true—owing, of course, to the fact that *for nearly a century* the Canal Company has favored foreigners and discriminated against Egyptians—but it is completely beside the point. The foreign personnel is (or until recently was) already there and on the job; the Egyptians are perfectly capable of paying them as much as, or if need be even more than, they have been getting. There is no reason to suppose that these experts, if left to decide their course free of outside pressure or inducement, would quit their jobs and go home. Whence, then, comes the threat to the operation and maintenance of the Canal? Clearly not from the shortage of properly trained Egyptians; in a free market the necessary skills can always be bought in the required quantities. The threat comes rather from the fact that the Canal Company, with the obvious support of Paris and London, has all along been determined that the market should not be free. On September 12th the *New York Times* reported, on the authority of Paris newspapers, that the Company has offered three full years salary and a retirement pension to all resigning pilots. And a few days later we learned of the stick that accompanies the carrot. Says the *Times* of

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September 15th, relative to the walkout of foreign personnel which began the previous midnight: "The old Suez Canal Company had circulated a message to its personnel that all employees were to work out their normal shifts up to midnight. Anybody staying on after that time, however, would lose special leave and retirement rights." And we may be sure that less direct, and very likely less pleasant, forms of pressure have been applied behind the scenes. These tactics may succeed in curtailing the capacity of the Canal, at least for a time. But let's call a spade a spade: the reason is not Egyptian backwardness but Western sabotage.

We have no intention of trying to present a full catalogue of hypocrisies: suffice it to say that official and unofficial spokesmen for the Western point of view have hardly spoken an honest word since the Suez crisis began—and *most of them know it*. They know that Nasser is no Hitler and that the "free world" is as hospitable to dictators as it is to democrats. They know that the reason for Western interest in Egypt has nothing to do with the welfare of the Egyptian people. They know that their devotion to unrestricted freedom of navigation through the Canal is as fraudulent as Nasser's is. They know that Egypt's difficulties in running the Canal are being deliberately created in London and Paris. Above all, they know that the real issue in the dispute is one thing and one thing only, the profits of foreign investment—immediately, the profits of the Canal Company itself; looming larger and more ominously in the background, the profits of that greatest of all capitalist combines, the international oil cartel.

They know these things, but they are afraid or ashamed to say them. Can one imagine a more damning indictment of a whole system?

The Canal As a Business

To read all the communiques which have been coming out of international meetings in London and Cairo in recent weeks, one would never guess that the Suez Canal is anything more than a narrow strip of waterway. In addition, of course, it is a big business, and a very profitable one too.

Not too much is publicly known about La Compagnie universelle du canal maritime de Suez. As its name indicates, it has its headquarters in Paris and shows all the customary reticence of the French business world (in France, a corporation is appropriately called a "société anonyme"). Nevertheless, a few facts and figures are available, and they are enough for our present purposes. (We cite from convenient summaries published in the *New York Times* of August 1 and *France-Observateur* of August 2, and translate francs

into dollars at the approximate rate of 1 billion francs=3 million dollars.)

Total assets of the company are listed at approximately \$250 million, which makes it a big company by any one's standards. In accordance with normal European practice, however, valuation figures are believed to be very low, so that the real asset total may be several times as large. Nearly half of these assets (\$117 million) is in the form of cash and securities, an extraordinarily high proportion which we shall have occasion to comment on below.

During 1955, revenues amounted to \$103.5 million and expenses to \$55 million, leaving a gross profit of \$48.5 million. The rate of profit calculated on total assets thus comes to almost 20 percent.*

Something over half of the profits went to the stockowners (of which the British government is by far the largest, with a holding equal to 44 percent of the two classes of stock outstanding). The Egyptian government, for its part, received only \$3 million from profits (to which must be added, however, nearly \$10 million in taxes collected from the Canal). A relatively small but highly interesting slice of the profits (\$640,000) went to the 32 directors of the Company for attending one meeting of the board every month—a tidy little director's fee of better than \$1,600 per meeting, which no doubt creates a strong bias in favor of the *status quo ante* in certain circles of Paris *haute finance*. Most of profits after dividends was set aside for repurchase of outstanding stock, investments, and improvements to the Canal—the total for these purposes being \$16.5 million. It must be noted, however, that in recent years the Company has not been spending for improvements anywhere near the full amount nominally allocated for that purpose. In 1954, for example, the sum set aside was \$7.5 million, while the 1956 annual report showed only \$3 million actually spent during 1955 for improvements. The balance seems to have gone into long-term securities which increased in the same period by \$9.3 million. The reader should keep

* By way of comparison, it may be interesting to note that on the average of the four years 1949-1952, the comparable profit rate (total profits divided by total corporate assets) for all United States corporations was 6 percent, and for United States foreign direct investments 15.4 percent. (These rates have been calculated from data regularly published in the Treasury's annual *Statistics of Income* and the Commerce Department's monthly *Survey of Current Business*.) Not too much significance should be attached to any of these rates taken by themselves, but they undoubtedly have a certain value for comparative purposes. They clearly illustrate the greater profitability of foreign as compared to domestic investment, and they indicate that *France-Observateur* was by no means exaggerating when it called the Suez Canal Company "une des plus belles 'affaires' du monde."

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this fact in mind for later reference.

To conclude this brief survey of the Canal as a business and investment, we can do no better than quote from an advertisement which appeared in the financial pages of the *New York Times*, over the name of the McGrath Securities Corporation of 70 Wall Street, on August 4th. The main heading is "S U E Z !!!" with a subhead "Foresight—Nerve—And a Calculated Risk." The text reads in part:

Even after it was finally opened to traffic in 1869, the Suez Canal represented an arrant speculation. Though dreamed of for centuries, the canal was a non-paying risk for a decade.

Then suddenly the speculation became a "blue chip"—and the work and vision of men with nerve combined with faith produced returns as staggering as any in the history of speculation (or, if you will, investment)—returns running year after year over 25 percent.

Perhaps it's just as well that most newspaper readers don't get to the financial ads. This particular one, at any rate, provided a rather odd contrast to the denunciations of injustice to Suez stock-owners which were such a feature of the editorial pages of the *Times* and other papers at about the same time.

The Economic Future of the Canal

Up to World War II, the Suez Canal was, first and foremost, Europe's trading route to the Far East. During the last decade a big change has taken place. Today, by far the largest part of the Canal's traffic is oil moving from the fabulously rich fields of the Middle East (Iraq, Iran, Kuwait, and Arabia) to the consuming centers of Western Europe. This is almost certain to continue to be the case into the indefinite future. Western Europe now consumes about 100 million tons of oil a year, of which more than 80 percent comes from the Middle East. Past experience indicates that consumption will have doubled by 1966, and the chances are that an even higher proportion will come from that region.

Under these circumstances, all means of transport between the Middle East and Western Europe are certain to be severely taxed, and in this limited sense the economic future of the Canal (barring political interruptions and wars, of course) seems assured. But whether the Canal will be able to hold anything like its present *share* of the business is an entirely different matter. Given existing facilities, the practical capacity of the Canal has about been reached, and everything therefore depends on how much this capacity is expanded in the years ahead. Many different programs of expansion are possible

and indeed have been extensively discussed in the specialized literature of the oil and shipping worlds. They range from relatively minor improvements to the existing waterway, through the provision of big by-passes allowing additional convoys to use the Canal at the same time, to the "double-tracking" of the Canal through digging a brand new ditch wide and deep enough to accommodate the giant tankers now under construction and on the drawing boards.

This is not the place for a discussion of the economics of oil transport,* and we will only note that failure to enlarge the capacity of the Canal in line with the growth of demand would certainly result in a steady increase of the share of the traffic going to pipe lines and/or supertankers which can operate profitably on the long run around Africa. In this sense, the future economic condition of the Canal is very uncertain indeed: it could stagnate at about its present level, or it could grow with and share the lush profits of the oil business.

These facts put Egypt's nationalization of the Canal in a slightly different light from that cast by most of the recent discussions of the problem. To see this, one must keep in mind that Article 10 of the Canal Company's original charter, dated November 30, 1854, provides as follows:

At the expiration of the concession [99 years after the opening of the Canal, i.e. in 1968] the Egyptian government will be substituted for the Company, will enjoy all its rights without reservation, and will enter into full possession of the Canal of the Two Seas and of all establishments dependent thereon. Either an amicable agreement or arbitration will determine the payment to be granted the Company for giving up its equipment and supplies (son matériel et des objects mobiliers).

This means that in twelve years the Canal itself is due to pass to the Egyptian government free and clear, while the supplies for which the Company is to be indemnified are now carried in the books at about \$70 million, which presumably would be reasonably close to the sum the Egyptian government would have to pay out if it chose to wait for the end of the concession. Actually, by nationalizing the Company now and agreeing to pay stockholders the prices prevailing for their shares on July 26th, the Egyptian government is obligating itself to pay out over \$200 million.

* The reader interested in following up this aspect of the Suez problem will do well to begin with the informative article entitled "In Tankers, the Race Is for Size," in *Business Week*, August 25, 1956, before going on to the specialized literature.

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At first glance, this might seem to be a poor piece of business. In the interest of his own country, shouldn't Nasser have been patient and waited until 1968? When account is taken of the urgent need to expand the capacity of the Canal, it will be seen that the answer is an emphatic negative. With its concession expiring in a few years, the Company has no incentive whatever to invest in the Canal and every reason for trying to get its assets into liquid form (and out of reach of the Egyptian government). This explains certain facts which we noted in passing, namely, the very high proportion of Company assets invested in cash and securities, and the discrepancy between sums apparently allocated to improvements and sums actually spent for this purpose. Clearly—and perfectly justifiably from a capitalist point of view—the Company is doing its best to get out of the canal business and into the investment-trust business: its unattainable ideal would be to wind up in 1968 with no canal at all and all its assets in the form of British, French, and American securities!

Needless to say, this would *not* be in the interest of Egypt, or of any branch of the oil industry, or of the oil-producing states of the Middle East, or of the oil-consuming states of Western Europe. As it happens, they all have a vital interest in the maximum expansion and improvement of the Canal—Egypt to get the greatest possible share of the profits of the oil traffic and the others to keep the costs of oil transport down to a minimum. In a genuinely rational world, nearly everyone would be clamoring for the Egyptians to nationalize the Canal—after all, even capitalists themselves could hardly maintain that a private corporation with a death sentence hanging over its head is an instrument of progress. But capitalist rationality is always self-contradictory, and in this case abhorrence of the principle of nationalization far outweighs its practical advantages. Whence the ironic spectacle of the oil cartel and the principle oil-importing countries joining together to condemn and sabotage a measure which in the long run could, and may still, greatly facilitate the transport of oil.

There is another aspect of this question which has been much less emphasized in recent weeks than it deserves. During World War II, Britain treated Egypt like a *de facto* colony, buying goods from her and paying with blocked sterling balances. In effect, Egypt was forced to lend money to Britain, and a large part of the forced loan is still outstanding, amounting to over \$300,000,000. These balances, which are not doing Egypt any good, are more than ample to buy up all the shares of the Canal Company at July 26th prices. To exchange these balances for the assets of the Canal Company, including its large reserves of cash and marketable securities, is obviously a very

attractive proposition from the Egyptian point of view, and not least important it would give Egypt all the capital needed for a big expansion program up to and including the "double-tracking" of the Canal.

The British who prefer economic aid *from* rather than *to* underdeveloped countries, naturally feel differently about it. But can it really be maintained that they have the slightest moral right to continue to reap the profits of the Suez Canal while refusing to repay what they forcibly borrowed from Egypt in their hour of need?

The Canal and Egyptian Economic Development

On this vitally important subject, Gilles Martinet, editor-in-chief of *France-Observateur*, has expressed our own views so exactly and concisely that it would be ungracious of us not to quote him verbatim:

In order to extricate themselves from the colonial system and build up their economies, the underdeveloped countries can rely only to a very limited extent on private investment from abroad. Foreign investment naturally flows into the exploitation of raw materials and not toward the creation of new industries, and it no less naturally seeks higher profits than it would be able to attain at home.

Nor can the underdeveloped countries rely on investment by native capital, for this capital—and this is the decisive factor—is still weak and practically incapable of playing the role of motor and guide which it plays in the West.

It follows that they must either have recourse to loans granted by the big nations and by certain international institutions, or else proceed to the nationalization of the wealth hitherto monopolized by foreign corporations and big landowners (or to make use of some combination of these methods).

The whole history of the underdeveloped countries in recent years has unfolded between these two poles. According to the social nature of their regimes, they have approached the one or the other. For the non-Communist Countries, Western aid has been the greater temptation. But since this aid is always surrounded by political demands which in fact infringe upon the recipient's national sovereignty, it has been more and more discussed, contested, and in certain cases even refused.

This reticence toward the West was accentuated from the moment the Soviets came upon the stage and proposed a system of exchanges in kind, with immediate delivery of heavy equipment (or in the case of Egypt of arms) being paid for over a long period by the products of the underdeveloped countries. Whatever its practical limitations, Soviet aid of this type has had an enormous political impact: on the tactical level, it allows the governments of the underdeveloped countries to

gain a certain liberty of maneuver; and from a longer-run point of view it opens the eyes of the peoples of these countries to what Socialist international relations might be like, as opposed to the old colonial relations. (This does not imply, let us note in passing, that the relations which Stalinist Russia established with the peoples democracies in the immediate postwar period were altogether of a socialist character.)

If Nasser had received the \$400 million which were promised him [in connection with the Aswan project], it is likely that he would have postponed the nationalization of the Canal Company—a nationalization which, however, was an old Egyptian demand and would have happened in any case in twelve years. Not having received this money, it was only to be expected that he should hasten the decision.

In doing so, he obeyed less a preconceived plan than a certain logic of history which is today making itself felt in Egypt, and which—let there be no mistake about it—will come into play in the same fashion in other countries tomorrow, and notably in French North Africa.

It is precisely because they perceive this logic and understand its implications that a large section of Western capitalists have decided that the time has come to call a halt and to make an example. To force Nasser to denationalize the Canal Company is not only to serve the interests of the stockowners of this particular corporation; it is also and above all to forestall the demands that some day will be presented in their turn by the Iraqis, the Tunisians, the Moroccans, and many others. (*France-Observateur*, August 2, pp. 4-5.)

The Twilight of Imperialism

We live in the twilight of imperialism. Aside from the great revolutions of our century, the nationalization of the Suez Canal is to date the most significant and symbolic event in the dying of a system and the ending of a historic era.

It is this fact that lends an air of classic tragedy to the otherwise sordid spectacle of the British and French governments shamelessly threatening war to defend privileges which are but the counterpart to the stunting and crippling of whole peoples in the colonial and semi-colonial lands. One feels that these little men—the Edens and Mollets—are in the grip of tremendous forces which they cannot even understand, let alone master; that they are playing out roles in a drama which their forbears wrote for them some century or more ago; that their doom in the final act is as certain as anything on this earth can ever be. And in the case of Mollet and his colleagues in the French government, the tragedy is a double one. For these

men are Socialists, convinced in their own minds and consciences that they present the rising forces of the future while in fact they are doing the dirty work of the most corrupt and degenerate forces of the past. Never before has the excruciating dilemma of social democracy been so starkly apparent—and so completely without hope of a sane and rational resolution.

Let us not make the mistake of assuming, however, that the final act of the drama has opened. If indeed war should break out over the Canal, it might be so. It is hard to imagine a more futile and self-destructive adventure from the Anglo-French standpoint—not because of the likelihood of Soviet involvement leading to World War III, but because war would only strengthen, intensify, and unify the very forces in the Middle East and Africa which it would be its purpose to stamp out or bring under control. Indo-China and Algeria combined and multiplied by ten would be something like the order of magnitude of the disaster which war over Suez would precipitate, and it might be enough to finish off both Britain and France not only as great empires but even as independent going concerns.

We do not believe, however, and at no time have believed, that this crisis will actually lead to war. Britain is deeply divided, and to its great credit the Labor Party—despite a characteristic failure to understand the real issues in the crisis or to present a coherent policy of its own—has taken a firm and principled stand against the use of force. This will certainly act as a powerful brake on the Tories, and United States influence can be expected to do the rest.

It is an unaccustomed pleasure for us on the American Left to be able to say that United States influence in a great international crisis has been and continues to be exercised in favor of a peaceful solution. And yet this is undoubtedly the case in the Suez affair. From the beginning, our government has acted as a moderating influence on the hotheads in London and Paris, and Messrs. Dulles and Eisenhower have made a series of public statements which add up to a virtual guarantee that the United States would not join in any overtly forcible measures against the Egyptian government. Quite apart from any question of motives or ultimate aims, this is all to the good.

But of course it does not excuse us from examining motives and aims, and when we do so we find that Washington is no more disinterested and no less concerned with preserving the privileges of the past than London and Paris. Our government's opposition to war is based in part on a realistic appraisal of the self-defeating nature of a prolonged armed conflict in the Middle East, and in part on the enormously important fact that this country stands to lose very much less than Britain and France from a different kind of campaign against

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Egypt, one employing what have by now become the orthodox methods of economic and political warfare. We can go even further and say that British and French losses from such a campaign would to a certain extent be American gains, so that on balance the United States can hope to emerge with a net profit. This circumstance alone is enough to make London and Paris angrily impatient for an immediate solution and Washington philosophically resigned to "letting nature take its course."

There are two main considerations to keep in mind in this connection: the first has to do with the Suez Canal Company itself, the second with the pattern of ownership of the world's oil. The first is easily disposed of. Almost none of the stock of the Company is owned in the United States, so that there is no powerful financial interest in this country to fight the battles of the Company. This is certainly not a decisive factor, but let no one underestimate its importance: the whole history of imperialism—as told, for example, by Hallgarten in the work cited above—attests to the great power wielded by wealthy and determined financial cliques. In a sense, indeed, French policy today is but the latest, and in some ways the most striking, illustration of this inner imperialist phenomenon.

The second consideration is more complex—and in the present context more important. The investments of the big Western European oil companies are heavily concentrated in the Middle East, those of their American counterparts are much more widely dispersed—not only in the Middle East itself but also in North and South America. This pattern of ownership has consequences for the national economies of the various countries. Britain, for example, can buy Middle Eastern oil from British companies and pay in pounds sterling: the operation does not put a strain on the British balance of payments, a fact of first importance in a time of dollar shortage and acute competition for international export markets. Any reduction of the flow of Middle Eastern oil would therefore not only be a loss to the British companies (primarily Shell and British Petroleum, the latter being the new name for what used to be Anglo-Iranian) but would also be a blow to Britain's already shaky balance-of-payments position.

The American oil companies are in a different position. True, they would stand to lose on their Middle Eastern operations, but the diversion of demand from that region would result in a more than commensurate rise in their North and South American operations (these are the only other regions which could supply the Western European market). This is so because British participation in the Middle East is relatively high and in the Americas relatively low. Moreover, Britain would not be able to pay for American dollar oil to

replace Middle Eastern sterling oil without large-scale financial assistance from the United States government; and of course acceptance of loans of this kind would increase Britain's dependence on the United States and impair her ability to pursue an independent course in international affairs.

Under these circumstances, it is quite understandable why the British should be thoroughly alarmed at the threat to oil traffic through the Canal, while the Americans contemplate it with equanimity even if without positive enthusiasm. At bottom, the issue is one of capitalist profits and national power, and these have ever been the ingredients of the fuel that drives the engines of imperialism—to its victories as well as to its disasters.

It is important to understand, however, that the divergence between Britain and the other Western European states on the one hand and the United States on the other does not extend beyond the sphere of method and tactics. The Europeans, feeling immediately threatened and fearing American assistance almost as much as they need it, have tended to lose their heads and to harbor illusions of a quick solution through a resort to arms. The Americans, in contrast, have seen the issues more realistically and have pressed from the beginning for a slower and less violent course of action. But the ultimate aim of both is the same—the vindication of imperialist “rights,” the propping up for a while longer of an outworn system. Whatever the outcome of this specific crisis—and we shall conclude by pointing out some of the possibilities—there is no reason to think that the more cautious American methods will be able to reverse the course of history any more than the obviously outdated and self-defeating saber rattling of the British and French.

Israel's Stake in a Suez Settlement

Before we attempt to speculate on the course and outcome of the struggle over the Canal, however, there is one aspect of the whole problem which deserves brief but explicit comment. We refer to Israel's stake in a settlement.

There can be no doubt that Israel has a legitimate grievance against Egypt's barring of Israeli shipping from the Canal. This action on Egypt's part is a flagrant violation of the treaty of 1888, and has been specifically condemned by the UN Security Council. Egypt hasn't a legal leg to stand on in the whole affair, and the maintenance of the ban under present conditions casts grave doubt on Nasser's *bona fides* when he now proclaims that Egypt is prepared to negotiate a new Canal treaty guaranteeing future freedom of navigation to all countries. It is true that the Western powers, by

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their tacit connivance at Egypt's discriminatory policy, have deprived themselves of the moral right to make an issue of the point now—and incidentally have put their own devotion to the principle of free navigation on a level with Egypt's—but that in no way affects the validity of Israel's case.

Under these conditions, there is a natural tendency for the Israelis to side with the West in the present dispute, on the theory that anything that weakens Egypt's control over the Canal could not but benefit Israel.

More careful examination, however, reveals the fallacy of this line of reasoning. Arab hostility to Israel has many roots, but one of the deepest is a conviction that the Jewish state is but a catspaw of Western imperialism. This is a conviction which is to a certain extent shared by all the colonial and semi-colonial peoples, and it accounts in good part for Israel's isolation from the nations of Africa and Asia—an isolation which was painfully evident at the Bandung Conference and which has certainly not diminished since. Unless Israel can somehow succeed in overcoming this feeling—and it will take deeds as well as words to do it—there would seem to be little hope that she can come to terms with her neighbors and enter upon a normal and peaceful existence. Now there has seldom been a more clear-cut pro- versus anti-imperialism issue than that of the Suez Canal, from which it follows that Israel would have a great deal to lose from lining up on the Western side of this dispute. For the truth is that on this issue, Egypt not only has the support of, but actually represents the vital interests of, all underdeveloped countries everywhere.

But we can go further. Though on the face of it the idea that Israel might gain from siding with Egypt may seem absurd, actually a very good case can be made out for precisely this contention. At least publicly, Nasser has taken a very reasonable stand throughout the period of tension and negotiation that has followed the nationalization of the Canal, and in particular he has repeatedly and explicitly denied Anglo-French charges that he is out to use the Canal for political ends. Perhaps he doesn't mean it. But on the other hand, this is a life-and-death question for Nasser, and he may well be prepared to offer suitable guarantees to prove that he is sincere and can be trusted to keep his word. If so, the most obvious and convincing test would be the lifting of the ban on Israeli shipping.

Doesn't this situation now provide Israel with a golden opportunity of killing two birds with one stone? By accepting the nationalization of the Canal, Israel can take an affirmative stand on a principle of decisive importance to the whole Asian-African world. And by raising

the question of her own shipping as a test of Nasser's good faith, she can pin down both Egypt and the West on what should now be a genuinely negotiable issue. The truth is that no nation stands to gain more from a settlement of the dispute on the terms which Egypt now professes to offer.

Mossadegh, Arbenz, and Nasser

If there is no war over the Canal, and if, as now seems probable, the two sides find it impossible to reach an early compromise solution, what course is the struggle likely to take?

That the American method of handling the Suez crisis would prevail was virtually assured by what transpired at the special three-day session of Parliament which opened on September 12th. First came Prime Minister Eden's announcement of the plan for a canal users' association. At first blush, this looked like a blatant provocation designed to prepare the ground for forcible passage of the Canal, and Eden did nothing to dispel the impression. But on the second day of debate, under Labor Party hammering, he was obliged to state that if the Egyptian government refused to cooperate with the users' association (which would attempt to run ships through with its own pilots), the case would be put before the UN Security Council—where, of course, the Soviet Union would be in a position effectively to uphold the Egyptian point of view. At this point, the whole plan was revealed as a typical Dulles legal trick, the idea being to make it appear that Egypt was violating the 1888 treaty by interfering with free navigation through the Canal. According to the Dulles logic, the Western powers would then have a legal and moral right to put the screws on Egypt. The users' association, in other words, was preparation not for the use of force but for the declaration of economic and political warfare.

This is a type of operation in which the United States has acquired considerable experience in the last few years, most importantly in Iran and Guatemala. In both these cases, the underlying problem was basically similar to that which confronts the imperialist powers in Egypt, and there seems little reason to doubt that the precedents established and experience gained will now be put to use in dealing with the Suez crisis.

The general pattern is familiar. The offending country incurs the wrath of the imperialist powers by nationalizing foreign-owned assets and attempting to pursue a more or less independent course in international affairs. In the case of Iran, it was the oil-producing and refining properties of Anglo-Iranian (a member in good standing of the international oil cartel), and in the case of Guatemala it was the banana plantations of United Fruit. Washington's procedure

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consists of two types of action which may be carried out simultaneously or successively. First, the victim is, as far as possible, isolated from friends and sympathizers, and the maximum possible political and economic pressure is applied. Thus, for example, Dulles ostentatiously attended the Caracas meeting of the Organization of American States in the spring of 1954 for the sole purpose of pushing through an "anti-Communist" resolution which everyone knew was aimed at Guatemala; while in the case of Iran a total embargo on the export of Iranian oil was successfully maintained throughout the period of nationalization. The purpose of this externally applied pressure is to frighten and divide the ruling circles in the victim countries.

This is where the second type of action comes into play. Elements in opposition to the existing governments are sought out, encouraged, financed, and armed, in exchange for promises—which of course are more likely to be of the nature of gentlemen's agreements than of written commitments—to reverse the policy of nationalization and play ball with the imperialist powers, and especially with Washington. (In this connection, it should not be forgotten that before nationalization the American oil companies were shut out of Iran altogether, while after denationalization their share was a tidy 40 percent.) The final act of the drama is a putsch in which the opposition takes over, with Washington shouting bravo at the top of its lungs and scrambling to accord the recognition which it so self-righteously withholds from genuine revolutionary governments.

With relatively minor variations, this is the way Mossadegh was overthrown in Iran and Arbenz in Guatemala. There is every reason to believe that the same fate is now being planned for Nasser.

If this is indeed correct, the big question is whether what may be fittingly called the Dulles method is likely to succeed in the case of Egypt as it did in Iran and Guatemala.

There can be no doubt that it may succeed. Economically, Egypt is a poor and weak country, and there are certainly important opposition elements among the dispossessed feudal landlords and downgraded pashas who would like nothing better than to hang Nasser from the nearest palm tree. And yet there are two very important differences between Egypt on the one hand and Iran and Guatemala on the other, and these differences have to be taken fully into account in assessing the possibilities and probabilities of the period ahead.

The first difference arises from the fact that Iran and Guatemala were both relatively easy to isolate, so that the Mossadegh and Arbenz regimes were able to get almost no help from abroad. Mossadegh's isolability was largely self-imposed: he and the ruling-class elements

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he represented maintained a rigidly anti-Soviet attitude until it was too late. Arbenz's was geographically inevitable, quite apart from any efforts or intentions of his government. Nasser, on the other hand, suffers neither from self-imposed tabus nor from an unfavorable geographical location. Ever since the Czechoslovak arms deal, he has been on good terms with the Soviet bloc, and he can certainly count on the sympathy and support of almost the entire Asian-African world. These are invaluable assets in a struggle of the kind now opening, and Nasser can be counted on to make the most of them.

The second difference concerns the role of the army. Both Mossadegh and Arbenz were civilians; both lost control of the situation when their respective armies refused to back them up; and both were overthrown by military men. Nasser's position is totally different. He is himself an officer; he rose to power as the representative of the army; and the army has been the base of his dictatorship ever since. Moreover, Nasser has done well by his fellow officers—the acquisition of arms from Czechoslovakia was particularly popular—and all indications are that he is firmly entrenched in control of the nation's armed forces. Nasser's internal position in other words, like his international position, is vastly stronger than was that of either Mossadegh or Arbenz.

We do not pretend to know what the outcome will be. It would be a great mistake to underestimate the power and the determination of the imperialists in what they rightly regard as their hour of greatest danger. On the other hand, Nasser is by no means the push-over that his Iranian and Guatemalan predecessors were. The struggle, once fairly joined, is likely to be long and costly to both sides. The imperialists may win again, as they have in the past. But it is very far from being a foregone conclusion, and it is a measure of the direction and speed of history in our day that now, only a few short years after the defeats in Iran and Guatemala, the anti-imperialists enter upon a great trial of strength with a reasonable chance that victory will be theirs.

(September 15, 1956)

EPITAPH FOR THE WESTERN IMPERIALISTS

There is something in human history like retribution; and it is a rule of historical retribution that its instrument be forged not by the offended, but by the offender himself.

—Karl Marx, *The Indian Revolt*,
New York Tribune, Sept. 16, 1857

THE WORLD OF SCIENCE

by Philip Morrison

This is the first of an indefinite series of pieces on topics drawn from the natural sciences. Since they will have one author, and will be diverse in topic if unified in viewpoint, they will add up to a kind of "science column" for *Monthly Review*. It is my intention to make them long enough to convey the nature of the arguments and accurate enough to be reliable, but they will be neither monographs nor archival documents.

It is important for the reader, especially if he has little familiarity with the natural sciences, to recognize that there are today no scientists. Aristotle came close to being one in his simpler day; but today there are astronomers, botanists, chemists, zoologists. . . . Indeed, within each of the classical divisions there lie whole realms of specialization whose citizens speak dialects of their own. No man can profess to master all of natural science. But this is not to say that an interested and trained observer cannot form and transmit a critical opinion about the important events in the growth of contemporary science. That is the aim of these pieces. They will err from time to time, rather on the side of enthusiasm for novelty than in defense of tradition. But they will represent throughout a skeptical but optimistic effort to summarize and to connect. They will be the battle reports of a partisan correspondent who tries to travel along the whole front, stopping to admire a successful skirmish, or to wonder at a great campaign. What would perhaps be best for historians—the calm, detailed, voluminous reports of the general staff—simply do not exist in the great war of man against his ignorance of the world. And historians have not failed to find value in the littler papers of the men who did the fighting, or of the passers-by who read their letters and talked to them.

Why a magazine devoted to the science of society, concerned with rational understanding and control of the forces of history, chooses to give space to accounts of the extension of reason and power into the natural world, its editors can best explain. But the reader can see for himself that reasons are not lacking—first and obvious, in the very ink and paper of the page itself; and second, by reflecting on how powerful in today's world are the ideas, the analogues, the inferences, drawn from natural science.

The last decade has seen an enormous growth of the theory of communication and control. It has become obvious how crucial a part of nearly every complex system is the means by which the actor can know that his efforts at action have in fact materialized. When you press the directional signal lever in your car, a flickering light tells the eye, or a click the ear, and through them your purposeful mind, that the signal has indeed been flashed outside the car. Without the tell-tales, or to a deaf and unwatching driver, the signalling action may become in fact useless, even harmful. This response system is called, in the radio engineering jargon by now generalized into a dozen sciences, the feed-back loop. Writing to a silent audience is making a signal without a tell-tale. I hope that a strong feed-back of questions, comments, contradictions, or suggestions, will be present as the constant guide essential to any working communications system.—P. M.

TOWARDS THE SYNTHESIS OF LIFE

The Quick and the Dead

The nineteenth century rationalists knew that in 1828 the chemist Wöhler had bridged the simplest of the gaps between the quick and the dead. He had synthesized from mineral materials alone the whitish needle crystals of a substance, urea, which was characteristically of animal origin. For a hundred years the list of man-made organics has continued to grow; the dyestuff indigo and the flavor vanillin may stand as historically important examples. Work has not stopped, but grown in power and quantity: penicillin was synthesized in the last decade, and simple examples of the proteins within the last few years. But there is a real difference between life and the long catalogue of useful or curious stuffs which the organic chemists have built up in their glassware. We duplicate mainly the simplest chemicals of life. We cannot make silk, even if we make nylon. And the best silk fiber would still be trivial compared to the living and metamorphosing cocoon-spinner itself. To fail to see that difference is to be more naive and smug than the most thoughtless of Victorian rationalists, and quite unworthy of an Engels.

Yet it has been the gain of the last decade that we begin to see clearly that the difference between the worm and his thread is a difference of complexity, and has a quantitative measure. We will not for a long time make a living being, not even a single cell, let alone a moth or a man, but the nature of the task is becoming visible. It would be wrong to say that the nature of life is now naively reduced to ordinary physics and chemistry, but it is equally untrue to say that the understanding of life seems now to hold any mystery beyond the view of the world which physics and chemistry imply. A living system is *not* an ordinary physico-chemical system, but it is an extraordinary one whose properties reflect its physical complexity, and possess the richness of pattern, of response, of metabolism, and of growth which no simpler system can have. Life from this point of view is exactly the collectivity of the properties of suitably complex molecular systems. To ignore the wonderful unparalleled complexity of such systems is as absurd as it is obscurantist to deny that even these complex systems are built of the physicist's atoms by the chemist's rules, and of nothing else. It is the subtle texture of their building that is their essence.

How the last decade has brought us more and more surely to this opinion, and what we may expect next, what steps towards the synthesis of life, as long ago Wöhler synthesized life's mere wastes, are what the rest of this piece will sketch.

The Biochemical Unity of Life

It is plain that living substance is in some way chemically unified; for lobster meat, calf liver, and wheaten bread are impartially incorporated into the flesh of man. It is even more remarkable, perhaps, that a potent hormone of the blood stream, say insulin, can be taken from hog or steer to replace perfectly that lacking in an ill man. So it is with a multitude of substances, the key tools of the modern doctor's arsenal. Now chemical unity in itself proves nothing, for we know that the stars themselves and the rocks and all matter are made up of the common building blocks: the atoms of the elements. The simplest of essentials, water, is perforce the same water in mushroom or man. There is no novelty in that. The molecule of water, bound into the rather chaotic state of the liquid, is a building block which all life needs. But what of the protein of a beefsteak? Its incorporation into a predator's muscle turns out, as direct replacement diets have proved, to be initiated by disassembly of the complex molecule of the meat into much simpler chemical units, the amino acids. A man can live and grow unperturbedly without eating *any* protein, without the protein of which his muscle, blood, nerve, and cell are largely built. He must, however, be fed the building blocks of protein: whitish crystalline powders which the chemist may extract from alfalfa or bean, or indeed synthesize from inorganic reagents, if he is patient enough. A couple of dozen specific molecular types represent all the blocks ever found in the hundreds of diverse proteins of the whole zoo and garden which the biochemists have analyzed. Always the same blocks, these molecules are particular and specific chemical structures containing, not the three atoms of the classical H_2O , but a dozen or two atoms of carbon, nitrogen, hydrogen, sulphur, and oxygen, selected in differing numbers and spatial arrangements. These molecules lacking, man cannot live. Green plants can make all they need, "spinning their fabric out of water and air by sunlight." A rat has a different set of requisite amino acids from a healthy man, and men may be born with needs greater than the normal list.

This story of the taking in of complex substances—flesh, milk, green leaf—and reducing them to a simple mash from which the body extracts the simpler chemical patterns it needs, is the account of the growth of a rational nutrition. It is too long to retell here, but the principle must be recognized. Vitamins, too, are substances of only moderate chemical complexity, commonly required by many and diverse forms of life, which must be supplied in food to man. But the full complexity in which the chemical units are supplied—the complexity and the specificity which distinguish beef from pork, or as we can now tell, one steer from another—is wholly lost in the taking

up of the flesh into man's own. The protein is supplied as a long molecular chain, a chain of differing links, arranged into a specific pattern, but the links are separated before absorption. The biochemists of Cambridge University (Sanger and others) were the first to analyze a protein so painstakingly three or four years ago that they were able to write down the order in which the amino acid links occurred. Their protein was insulin, a hormone, a substance secreted from an internal gland into the blood stream, which induces a specific effect on some tissues remote from the gland. Hog, steer, and human insulin are nearly, but not quite, the same string of links. But insulin is a highly specialized kind of protein, a signalling substance, in function like the odorous liquid added to the gas lines to give warning of a leaky burner. It, with other hormones, is a relatively simple protein, a chain having a length of a few score amino acids. The majority of such amino acid chains—the proteins of muscle, those proteins called enzymes which specifically mediate the myriad chemical reactions of the life process, and many others—range to lengths of tens of thousands of links. The proteins which make up blood sera are such long chains, rolled into tangled balls like yarn. Those which form hair are spun of other similar chains, as thread is spun of cotton fiber. But always and everywhere we find the same links.

Such structural information on the proteins is won by the techniques of the physical chemist: x-rays, electron microscopes, chemical analysis, study of the thermal, mechanical, and optical properties of these substances and their solutions. The same path has been followed to understand the crystals of the inorganic world—salt, copper, or sand—and is as well-founded as the world of the atom. Volumes are filled with careful scale maps of the simpler molecular structure of inorganic stuffs, which bear approximately the relation to the structure of such typical biological substances as does the somewhat banal pattern of a checkerboard to the intricate line of a Picasso drawing. The protein analysts' work is only beginning, but what we have reported of it at least is firm.

We see then a hierarchy of chemical complexity. The atoms form into building blocks. The type example of these, water, the familiar H_2O , is no less vital than it is ubiquitous. More complex are such things as amino acids or vitamin or penicillin molecules. Their formal names and their structural formulae are jagged and barbarous; but they all unite some score of atoms into a specific pattern, usually found in diverse forms of life, everywhere with a similar function. Now the proteins appear, long tangled chains, but each with its special order of molecular links. What one form of life takes when it consumes another is a set of such building blocks, but it rejects and destroys the chain pattern. For the chain pattern is in most cases unique to

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each form of life, and indeed there are lines of evidence which point to the possibility that some of the chain patterns are unique not only to a species but to each individual within it. The problems of surgical skin grafts and of allergies, which are so strongly individual, are the signs of such protein specificities.

It is well at this point to examine the numerical basis of diversity. The living world teems with forms, and each form is represented by hosts of individuals. There are molecular groupings in plenty, but the combinations of atomic patterns on the models of H_2O or of the amino acids, are not numerous enough to allow such proliferation of differences. The vitamins, for example, may be given simple names and letters; such compounds have not appeared in enough diversity to distinguish the different cells of life. Nature has had to do for the world of life what man did for his ideas when they had to be symbolized. From a few thousand words, each made of a dozen letters, chosen from a score or so possible, *Hamlet* itself arises when the word-string is long enough and correctly chosen. "Words, words, words"—and many identical in *Hamlet* and the *Daily News*. So it is in the chemical basis of life. Here atoms are the letters, which a set of physico-chemical rules—the spelling-book—allows to combine into thousands of molecular building blocks. These blocks—amino-acids, vitamins, sugars—are strung into short or long sentences, the proteins and other classes of long molecular chains or nets, generically called polymers. Sentences are made into books: the polymer molecules are organized into living cells. Just as twenty-six letters set over and over and over again enable by permutation the enormous diversity of literature, so a few types of atoms, appearing again and again, build up in word-like groups the diversity of life, compared to which all man-made literature is still simple.

Virus and Cell: the Know-how and the Factory

We are seeking origins. It is plain that our discussion on the level of chemistry is a long way from the large-scale visible or even microscopic anatomy and physiology of living matter. Artery, bone, hair, internal organs are far from comprised by our account. But it has been a commonplace of biology for more than a century now that all of the higher organisms, nearly without exception beyond the amoeba, are organized groups of more or less specialized living cells. Such cells are typically microscopic compartments of living matter, showing some degree of autonomy. They can be cultured by themselves in glassware, and one can see whole colonies, say of human liver cells, which grew in no one's blood stream. Only the parent cell was once taken from a living body. It successfully grows and divides, grows and divides, until it becomes a whole layer of cells in a glass

dish. A single cell thus shows the essential attributes we call life. It needs only this, and the record of the rocks, to convince us almost beyond doubt that life began not as any complex living form of to-day, but as something like a cell, or perhaps even less developed than a cell, somewhere on ancient shore or sea. For this reason, we confine ourselves in this account to life of the one-celled kind and below.

The fact that most higher forms pass somewhere in the history of each generation through a one-celled stage which preserves the full specificity and individuality of the type—in man, through a fertilized ovum of largish but still microscopic dimensions—is convincing. The development of the cell colonies into the subtly coordinated organism as a whole is another great and mostly unwritten volume of biology. But it is the case that there is not much new chemistry in a man which cannot be found in a single bacterial cell. A common bacterium can live on a dilute solution of sugar in sea water, with perhaps a bit of ammonia added. Such a cell reproduces living matter after its own kind at an unparalleled rate. It is surely living; it has the full complexity of life, in its chemical aspects at least. Abilities like those to see and to hear, even to learn, are more and more clearly not of the essence of life, for the photocell, the microphone, and the electronic computer stand as evidence to the contrary. It is the autonomous self-reproduction of a complex system which is beyond the machine, and which fascinates us as we examine the least creatures of the living world.

Whoever has had measles or a fever blister knows intimately the work of a virus. There are known hundreds of races of virus, usually discovered because of their importance in medicine—or, when they attack man's domesticated animals or plants, in economics. They are a diverse group, but they may be typically considered to be sub-microscopic particles, related in size to a microscopic bacterial cell about as a fly is to a cat or a mouse. They are found infecting cells of organisms from the tulip to the ape, from the frog to the single-celled germ of pneumonia. The laboratory worker most often uses the virus of influenza, which he grows within the living membranes of a hen's egg, or of tobacco mosaic disease, which grows in patches of dying cells mottling yellow the infected green leaf of a tobacco plant, or a bacterial virus (often called a *phage*, "the eater,") which is a virus which grows within a living microscopic bacterial cell.

The typical virus particle is known (by using the standard means for structural study of small objects) to be a little shell woven of special folded protein chains. Within this shell there is coiled a long polymer molecule, itself a chain of links. These links are not amino acids, but chemical molecules called nucleotides, in which phosphorus and nitrogen atoms play a key role. For our inquiry it is enough

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to point out that these nucleotides are known to be closely related to the kinds of molecules in which the energy that drives the chemical reactions of all life is typically conveyed within the cell. This draws our attention to the virus core: indeed, it will appear that in our present view this is the key substance of life itself. It is called nucleic acid, and is found, in one of two related forms, in all cells of living matter, as well as in the viruses. The core of animal and bacterial viruses is mainly of the kind called DNA (which everyone substitutes for the long name desoxyribonucleic acid); that of plant viruses, RNA. DNA and RNA occur in all cells in differing amounts. The structure of the nucleic acids is not surely known. The x-ray data are beautiful but intricate beyond unique analysis. Still, it is all but certain that DNA, at least, is a multiform substance. Like the proteins, it is a kind of assembly of parts, the nucleotides, which may go into the total structure in any order, until tens of thousands have been assembled into a kind of helical chain, as we now believe. Thus this substance, which always analyzes into nearly equal parts of only four or five different molecular links, its nucleotides, is like a strip of ticker tape, on which are printed a succession of symbols, tens of thousands long. The symbols are the nucleotides. Only the few kinds are possible; they occur in any sequence, used over and over again, until the strip ends. No one has been able to analyze in great enough detail to give us an idea of the order of the links, but it seems plausible that this order varies from virus to virus, from cell to cell, from individual to individual.

So much for the form, with its suggestion of function. Now for how this wonderful substance behaves. We choose but one example of what has been learned, nearly all since 1944 or 1945. Consider a bacterial virus. It is an inert little protein case, tiny beyond microscope and filter to detect. But the electron microscope shows it to be shaped like a rattle with a stiff protein handle. This handle sticks to a specific bacterial species something like a leech on a dog. In a couple of minutes, some sort of hole forms in the bacterial skin, and through the hollow handle the core nucleic acid leaks into the living cell. If now the cells are vigorously shaken to remove the protein rattle-case, nothing of the subsequent process is affected. It has been shown by seeing what shakes off that the protein does not appreciably enter the cell; whatever happens from the time of entry is the work of the nucleic acid. It is a marvelous work. For provided only that the invaded cell is a suitable one and that the cell is living and furnished with its normal nutrients (sometimes even less than its normal needs), the cell continues actively about the process of growing. But the growth is deadly. In twenty minutes or so the normal cell would grow, and finally divide to produce its daughter cells. Instead, at

the proper time, the growing cell bursts open, and the cell substance released is but a little clump of pitted debris, overwhelmed by a swarm of a hundred or two virus particles, each identical with the little rattle which first attached itself to the living cell. Each of the virus progeny can repeat the process in turn, if only it can find a living cell of the right host. The injected nucleic acid has seized control of the cell and diverted its life processes to the manufacture, not of new cell substance, but of new virus.

Last year a similar confirming result was obtained with the tobacco mosaic virus. This is simpler; it is a short stiff rod. It has no special way to enter the living leaf; it must find a microscopic crack or break in the leaf cell wall. It may then enter a cell and multiply. The progeny leave the now ruined cell, and spread throughout the leaf and finally the whole plant by a chain reaction which does not cease until the vigor of the plant has dropped too low to keep the process going. Berkeley scientists succeeded in chemically removing the stiff protein sheath from the virus rod. The pure delicate threads of nucleic acid within (here RNA, while in bacterial virus DNA) could also infect the plant leaf when rubbed into it. The plant cells then produced new virus, complete with the proper protective protein sheath. The nucleic acid could be reunited with a set of protein sheaths removed from a distinct but related virus, and on infection, this synthetic hybrid yielded virus which was true, not to the protein sheath, but to the nucleic acid core within.

This complete taking over of the infected cell is not the only DNA effect. Some viruses—recall the familiar fever blister—lie latent in cells for a long time, are passed from generation to generation, and only after a long time respond to various stimuli to take over the cell. While they lie latent, some may determine heritable traits of the cell. A kind of pure DNA, taken from one strain of bacterial cell, may be added to the growing cells of a related strain. The DNA enters the cells (which are of a species with very thin cell wall) and transforms those it enters, with all their progeny indefinitely far into the future, into the type from which the DNA was taken. It is easy to show that the DNA cannot be diluted out as the cells divide, each passing a little legacy of the original chemical addition to its daughter. For rather soon not a single molecule would be left to pass on. No, the DNA is being duplicated anew in each act of cell division, and fresh molecules of the specific DNA are going down through the cell family to fix in it the newly-acquired trait.

The higher forms of life begin as egg—a single cell. The concentrated material of the fertile egg contains some kind of instructions which suffice to control the normal organism which develops. But the virus invader commands its host cell to make, not cell, but virus.

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It is the nucleic acid alone which carries the command. The nucleic acid can command fully, as in the virulent viruses, or partially, as in the new traits carried into cells by nucleic acid. But command it does. The naked nucleic acid has no machinery for the chemical acts of duplication, for making the new protein for new shells, for making new and duplicated nucleic acid, or for any other task. It can but command the proper cell to do. It is a material realization of the ancient command, "Go forth, and multiply." We may argue the verbalization of the matter, but we cannot deny to nucleic acid, this curious chain of many simple links, its power. If it is not life, and it is surely not as rich as life, it can direct life. It is the understanding of our day that this particular material, diverse as the sentences of a strange tongue, and like a written sentence built of a sequence of rather simple elements, contains the information for the multiplication of any living form. A virus is but the safely-sheathed instruction, an instruction which may be more or less imperative, which informs a cell machine what to make, and causes it to make cell material modified a little in a specific way, or a great deal and drastically.

The Biology of Self-Reproduction

In this sense, then, we have come close to the wellsprings of life. Speaking simply and analogically, but with real seriousness, the act of the duplication of life, which no machine has yet begun to simulate, can be described in machine-like terms. But the machine's parts are not the clumsy gears and levers of man-made clockwork, nor even the more modern vacuum tubes and resistors. They are the molecular building blocks and their polymer chains and nets. It is the tiny size of such component parts and hence their enormous number, that distinguishes the richness of the living world from the halting automata of man.

A cell reproduces itself: this is the fundamental of all life. The virus teaches us a description of the act. We think that a long instruction is "written out" in the sequence of the links of a nucleic acid. This set of rules and program may be imported into a cell from the outside, in which case it is an invader, a virus, which may be more or less virulent. Alternatively, the rules may be those normal to the cell. These are inherited at the time of formation of the cell by the fission of its parent. They are presumably stored in the chromosomal apparatus of every normal cell, a region known to be rich in nucleic acid. Now, the cell is a versatile automatic chemical factory; it can produce whatever is called for by the set of instructions. If a virulent virus injects its DNA set, which for unknown reasons is overriding, the cell produces virus parts, and assembles them into new virus. The protein of virus, and even the nucleotide units, are chemic-

ally foreign to the cell. But it is told to make them, and it can do so, using the normal nutrient supply of raw materials. Normal self-reproduction works analogously. The instructions are given in the nuclear material of the cell. They direct the cell to make new cell material, and to duplicate as well the instructions themselves. The cell grows and divides; the daughter cells start life just like the parent, each equipped with one of a duplicate set of nucleic acid instructions. Sometimes an error is made, say, in copying the instructions: in this case, the new nucleic acid molecule is not identical with the first, in the sequence of its nucleotides. Such an error may be fatal, and the new cell may fail to work in some step of its complex chemical life history. Perhaps a crucial "word" is omitted. But it may, at least rarely, simply do something new: a wrong but meaningful "word" has then been put in. This is a rationale for the process of mutation, which in interaction with a changing environment provides the driving force of natural evolution.

The mixing of instruction tapes, part from each of two (or more) parents, is now our picture of the nature of sex in genetics. Viruses may cross instructions in this way, often among many, and not just two, mates. Such an action is thought of as the synthesis of a new nucleic acid chain, with some features derived from each of several parent nucleic acid chains. Studies of the possible number of such mixings have led to the conclusion that the unit of the code, the minimum significant element of the polymer, may be as small as just one of the nucleotide links. Such a link is so small that if we match off one nucleotide for every printed letter, the contents of the *Encyclopedia Britannica* could be stored within a speck of nucleic acid too small to be seen in a powerful microscope. It is this compactness, flowing in the end from the smallness of atoms compared to our clumsy tools, that marks life as apart from artifice. It is this compactness which allows packing into the microscopic egg all the inherited difference between man and frog, or between man and man. It is this existence of specificity and variation on an atomic level which allows the cunning intricacy of those self-duplicating coordinated chemical producers we call living cells.

Towards the Synthesis of Life

A virus is, from our present standpoint, purely an instruction book with a protein binding. Its forebears perhaps escaped from a cell, long ago, to "live"—or at least to reproduce their kind—precariously and parasitically. It is a kind of book written in sequences of nucleotides. Its text gives instructions to a particular machine, directions for producing the proper "paper, ink, and leather," and for duplicating the book. The nuclear instructions of a normal cell (some

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of the information may lie in less stable form outside the nucleus, in the RNA cell fraction found in most cells) contain parallel instructions, but in addition give the rules for making the very machines that secrete the materials needed. It may well be that a cancerous cell is one with faulty instructions, either amended in the line of copying, or brought in by a virus-like infection with a special kind of nucleic acid. With this amended set of directions, the cell no longer responds to the organizing efforts of the body as a whole, and continues uncontrolledly to multiply. We do not know, but the lines of thought are beginning to converge.

Not long ago a biochemist in New York, S. Ochoa, tried a bold thing. He had mixed a collection of nucleotides together under chemical conditions such that they would join to form a long RNA chain. Such chains did form, and they were then in no chemical way different from the chains of RNA which are the infective portion, say, of tobacco mosaic virus. He was hopeful enough to surround them with virus sheaths removed from normal virus, and to test his artifacts on tobacco leaves. They did not reproduce themselves in the growing leaves. We can see why. His chains were a simple gibberish of "letters," the results of random accumulation. Only by incredible chance could he expect to hand out thus randomly the instruction code which the cell machine would accept for virus delivery. It is just the story of the monkey on the typewriter keys making, not perhaps a work as long as *Hamlet*, but the first chapter or two of *Genesis*. Moreover, among the myriads of RNA chains within Ochoa's test tube, probably no two were just alike. But in the true virus RNA, there are only occasional differences between one chain and the next, if the viruses have a common parent. It is this orderliness, this self-reproducing selection of the single sequence from the enormous number of possibilities which defines the living self-duplicating system. Ochoa's molecules almost certainly do contain, wholly by chance, some sequences which are correct, sequences perhaps ten or a hundred "letters" long. These may well have "meaning" to a cell, and hence induce striking biological phenomena. But that they could hold the whole correct set of rules for their own reproduction entirely by chance is wildly improbable.

The trend of this work is clear. Slowly, small bits with "meaning" may be found. Eventually—probably in the next decades—a self-duplicating system, simpler than any natural virus, and using perhaps not an intact cell machine but a rich set of almost-assembled chemical parts, will be made by man. When that is complete, the process by which, long ago, at the side of some ancient tide-pool, the first life on earth spontaneously appeared, will be easy to infer.

It is not clear yet. Even if we make a kind of synthetic instruction

which can work a kind of simplified assembly-machine, we will be far from cells and further from man. But the mystery, though never the wonder, will be all but gone. The simple juxtaposition of simple but marvelously numerous units is the key to life. Out of dull combination complexity arises. Out of complexity, quantitatively increasing along a continuous line of development, arises a qualitative difference. It is no less than the difference between the quick and the dead. As the understanding of this grand riddle grows, there will grow with it our control over virus and tumor, a sure practical consequence of theoretical progress.

These are years of striving and of harvest. The biological science of our days is the finest example of the pattern into which the world and its changes seem best analyzed, a pattern which was seen dimly by that vigorous manufacturer from Manchester seven decades ago.

A few readings for the interested:

- (1) L. Bertalanffy, *Problems of Life*, London, 1952. This work comes from a wholly different tradition, that of philosophic analysis, and reaches in a classical way a very similar position.
- (2) S. Luria, *General Virology*, New York, 1953. The best textbook touching these topics, it is worthwhile for the hasty browser or the serious student.
- (3) Articles on viruses and on information theory in biology which appear in every volume of such journals as the *Scientific American* (especially good), the *Scientific Monthly*, and the *American Scientist*. Some of these at least exist in nearly every library in the United States.

BOUND VOLUMES

Volume 7 of *Monthly Review*, which runs from May 1955 through April 1956, is now available. It contains 512 pages including an index. It is bound, as in other years, in a beautiful wine-colored linen cloth, with gold lettering on the red-leather label on the spine. It is priced at \$7.

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THE UPPER CLASSES

BY "THE MAIN LINE TIMES"

The following editorial appeared in the July 26th issue of *The Main Line Times*, a newspaper which serves the wealthy suburbs of the Philadelphia "Main Line." The subject of the Upper Classes is clearly one that the editor knows from first-hand observation and experience.—THE EDITORS

It has come to our ordinarily parochial attention that one of the latest flaming issues in Great Britain is the puzzling question of how to distinguish a member of the Upper Classes (which is the Americanized spelling of Uppuh Clawscs). This was presumably easy to do in the Good Old Days when wealth was the criterion of aristocracy and the lower classes were automatically in the lower income brackets. But ever since "the Fabian Society ruined England" (as Delaware County's learned State Senator G. Robert Watkins informed the public recently), it has become necessary to discover more subtle ways of telling a member of the upper classes from the common herd. The vulgarization of money in England (that is, giving some of it to the lower classes and taking some away from the upper classes) has virtually wiped out the chief distinguishing mark of upper classes.

In fact, this is undoubtedly the reason why the question has come up. Deprived of its wealth, the upper classes in any society become strangely indistinguishable from the rabble. Take away the landed gentry's land you take away his gentryness. If the English are currently puzzled about how to tell impoverished aristocrats from their ordinary crats, that is because they are making a false assumption about the problem in the first place. In believing that there is still an aristocracy at a time when peers are selling their castles to pay their grocers and Lords are becoming disc jockeys, the English are still suffering from the illusion that there is something innate—something born into members of the upper classes—that distinguishes them from the common people, regardless of the condition of their pocketbooks.

This assumption puts the cart before the horse. The origin of an upper class is piratical, not biological. It begins at some point in the early history of a culture, when the stronger, smarter and less scrupulous individuals gradually gather unto themselves the principal sources of wealth in a culture. Initially it is this superior greed that alone distinguishes them from the remainder of the population. The original peer is a predator.

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This wealth then leads them to invent titles and perquisites for themselves. They acquire superiority in rank and power and privilege. In other words, they become superior because they are rich. But in keeping with the easy logic of human nature, they readily become convinced of precisely the opposite; that they are rich because they are superior.

This pleasant myth is then elevated into an eternal truth, and this mythical superiority is passed down from generation to generation, along with the estates, land holdings, tenant rents and other kinds of hereditary wealth. And consequently, so long as the landed gentry remains landed, it is able to maintain its mythical claim to a natural superiority over the landless poor.

But when economic evolution gradually divests the aristocracy of its wealth, it thereby becomes denuded of its distinction. And as in England today, it becomes a bewildering problem to be able to tell a member of the upper classes from some beer baron or butter-and-egg man from Manchester.

The English, however, should not be too much troubled by this dilemma. All they need do is seek out among themselves those who are accumulating the most wealth in the country today. These are the people—whether they be suave Oxford dons, London greengrocers or chimney sweeps—who will comprise the next upper class. Their wealth will soon convince them that they are rich because they are superior. And thus a new aristocracy will be born.

The most striking result of our present system of farming out the national land and capital to private individuals has been the division of society into hostile classes, with large appetites and no dinners at one extreme, and large dinners and no appetites at the other.

—Bernard Shaw

ODE TO SENATOR EASTLAND

*Last night I saw upon the stair
A little "Red" who was not there,
He was not there again today,
I'm ruined if he stays away.*

—Frederique

GRAVE INJUSTICE— NEVER TO BE FORGOTTEN

BY STEPHEN LOVE

Malcolm Sharp, a distinguished scholar long a member of the faculty of the Law School of Chicago University, has written a vitally important book about the Rosenberg-Sobell Case.*

Professor Sharp first became interested in the case because of his belief that the death sentences meted out to the Rosenbergs and the 30-year sentence imposed upon Sobell were unjust. However, as he studied the record more closely he became convinced that the defendants were innocent and were entitled to a new trial. This was exactly the experience of the present reviewer as he closely studied the 2600-page record.

Having become convinced of the innocence of the Rosenbergs, Professor Sharp volunteered to aid in the preparation and argument of two motions, one being a statutory motion analogous to the old *habeas corpus* petition and the other a motion for a new trial. In view of the length of the record, and the many facets of evidence and questions of law to be considered, this was no small undertaking. In view of the nature of the sentences, it might be assumed that Judge Kaufman would give the arguments serious consideration. He has consistently pictured himself as a judge who has given the defendants every consideration, and the public and even the bar have come to believe that, because very few people have bothered to study the record.

The facts are that the arguments of counsel for the defendants on the above two motions took well over two hours on Monday, June 8, 1953. The response of counsel for the government consumed approximately half an hour. Judge Kaufman thereupon retired for 15 minutes and returned with a written opinion which took him 32 minutes to read. Obviously he paid no attention whatever to the arguments, and had intended to pay no attention to them, having prepared his opinion in advance, on the basis of the petitions filed only 48 hours prior thereto, on the preceding Saturday. Within the elapsed

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* *Was Justice Done?* by Malcolm Sharp, Monthly Review Press, \$3.50.

period of less than 48 hours, the learned judge had studied and examined the papers and had written his lengthy opinion confirming the sentences.

In like fashion, the press and the public and the bar had become convinced that the Rosenbergs had been given more than ordinary consideration, and had been "treated much better than the Russians would have treated defendants in their courts." The relation between the conduct of the Russians and the duty of our own courts is difficult to understand. The unvarnished fact is, however, that only two days after Judge Kaufman had denied both motions, the Court of Appeals did the same, on June 11th; that on June 12th, the defendants filed a petition in the Supreme Court to review the decisions and for stay of execution pending full preparation of the arguments and papers in support of those petitions; on June 15th, the Supreme Court declined to hear any oral argument in behalf of the defendants or to grant a stay of execution, all by a vote of 5 to 4, Justices Black, Frankfurter, Douglas, and Jackson dissenting. It would appear to the layman interested in preventing injustice in a case in which injustice can never be repaired, that ordinary decency would proscribe rushing to the death chamber two defendants when at least four justices of the Supreme Court deemed them entitled to a stay of execution until a full presentation and hearing could be had in their behalf.

Nevertheless, when Justice Douglas granted a stay on June 17th, Mr. Chief Justice Vinson reconvened the Court (it is believed that this had only been done once before) and on June 19th the Supreme Court vacated the stay of execution and denied the motion for further stay to consider the petition for clemency which ordinarily is not presented to the Chief Executive until after all judicial avenues are closed. Mr. Justice Jackson's opinion with respect to the order vacating the stay concluded as follows:

Vacating this stay is not to be construed as endorsing the wisdom or appropriateness to the case of a death sentence. That sentence, however, is permitted by law and, as was previously pointed out, is therefore not within this Court's power of revision.

The Court made its final decision about 2 o'clock on June 19th; thus there remained only about 9 hours for the presentation of the clemency petition to the President, the execution being set for 11 o'clock that evening. That petition was in the custody of the Pardon Attorney, a functionary of the Department of Justice. To the layman it must appear strange that the only person who examines the record, and makes a recommendation to the President, is an employee of the very department of our government which is demanding the execution of the defendants.

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Obviously, the President did not examine, nor did he have the opportunity of examining, the record in this case. Without an examination, he denied the petition for clemency. Although deputizing the function of examining and considering the record might be appropriate in the average case, it is doubtful whether it was justified in a case so controversial and involving such grave consequences.

After the petition had been denied, counsel for the defendants asked that the execution be postponed at least until after the Jewish Sabbath, which began at sunset that evening. The answer of the authorities was to advance the execution to occur before sunset, and the Rosenbergs were electrocuted shortly after 8 o'clock that evening.

Since most of our Supreme Courts give all possible consideration and time to defendants in capital cases, in order to avoid irreparable injustice, the above time schedule seems amazing.

In harmony with the general view that the defendants had been given every consideration by the courts, the public and the bar have the notion that the defendants had been heard in the Supreme Court, a view generated by the press and by "commentators," none of whom has studied the record. The unvarnished fact, however, is that, as stated by Mr. Justice Black, "This Court has *never* reviewed this record and has *never* affirmed the fairness of the trial."

The fact that, in a case predicated upon the testimony of accomplices, uncorroborated by any other witnesses, two human beings can be sent to the electric chair without having their case reviewed, or even considered on the merits, by our Supreme Court is a sad commentary on the federal judicial system. Such a practice may be practical but is hardly just.

Professor Sharp's review of the case is as comprehensive and fair as may be expected from a scholar of his standing. He assays every item of evidence carefully and almost entirely destroys the government's case. It would be difficult to answer his analysis.

Among the many weaknesses of the government's case is the fact that it was based almost entirely on the testimony of acknowledged accomplices, without material corroboration. Many jurisdictions do not permit a conviction under those circumstances. They share the view of Professor Sharp, and of this reviewer, that unsentenced accomplices have a peculiar temptation to save themselves at the expense of someone else. The chief witnesses against the Rosenbergs were the Greenglasses, and their reward was that David Greenglass, who was at least as guilty as he tried to make Rosenberg appear, received a sentence of 15 years, which would make him eligible for parole in 5 years; Mrs. Greenglass was not even indicted, while Mrs. Rosenberg was executed.

Professor Sharp demonstrates conclusively, it seems to me, that

the Greenglasses testified falsely in a number of material respects. That David Greenglass was a liar seems incontrovertible. His veracity is best assayed by his own wife, who, in her statement to her own lawyers, in preparation for the trial, said that "she had known him since she was ten years old. She said that he would say things were so even if they were not."

There is so little reliable evidence of the defendants' guilt in this record that any disinterested student of it would conclude that justice required an acquittal or at least a re-trial, a re-trial before a trial judge less convinced, from the start, that the defendants were guilty—probably because they were, or early in life had been, Communists—and so obviously determined that a Jewish judge could demonstrate to the world that he could be "tough" even in a case in which the defendants and all of their counsel were also Jewish. A perusal of the record shows ample justification for the claim of counsel that at a hundred points in the record the trial judge had shown manifest hostility toward the defendants. As stated by one of the best judges of the Illinois Supreme Court, "jurors are ever watchful of the attitude of the trial court, so that his lightest word or intimation is usually received with deference and may prove controlling."

As really concluded by Professor Sharp, the Rosenberg case was one in which most of the *rules* of law, particularly in the review of the case, were observed and yet justice was frustrated. For him to arrive at that conclusion took courage. For him to make the exhaustive study of this long record was a tribute to his desire to advance the cause of justice.

If a layman were to read the record, or, better still, read it with the aid of Professor Sharp's careful and fair analysis of it, he would, I believe, be puzzled as to the soundness of any judicial process which makes possible such a result as that in the Rosenberg and Sobell case. He would arrive at the conclusion that the Rosenbergs, who went to their doom without accepting the government's offer of some clemency in exchange for a "confession," had been the victims of a judicial procedure sadly in need of correction. If the efforts of men of the caliber of Professor Sharp awaken a sufficient number of Americans who take pride in their institutions and who love their country, our judicial process may be so improved that similar injustices may be avoided. The Rosenbergs will then not have died in vain.

WORLD EVENTS

By Scott Nearing

Suez

Use of the Suez Canal is important to the trade, commerce, and travel of people from some two score nations. Practically, Suez is an international waterway. Legally, since it was opened, the canal has been a monopoly. Until this year, it was owned by a corporation whose shares were held chiefly in Britain and France. On July 26, 1956, it was declared to be national property by the Egyptian government.

Throughout its history, the Suez Canal, and the Egyptian territory through which it runs, have been "protected" by British armed forces. Incidentally, the whole of Egypt was a "protectorate," dominated by the same armed men who had assumed the responsibility of safeguarding the transportation of shipping through the canal. President Nasser's proclamation nationalizing Suez transferred the monopoly of the canal from the government in London to the government in Cairo.

Discussions between London and Cairo concerning control of the Suez Canal had been going on for years. They were brought to a head by Washington's decision, in 1951, to take a more active part in Middle East politics. War was on in Korea, Malaya, Indo-China. Oil-rich Iran was in turmoil. Unrest was spreading through Africa. Tension was growing between Israel and the Arab world. In June 1951, the United States established its first military base in the Middle East, at Dhahran, Saudi Arabia, in the center of oil production. In October 1951, Washington proposed a Middle East defense alliance modeled on the North Atlantic Treaty Organization, with Cairo playing the role of local policeman. The extensive British base at Suez, with its network of railroads, highways, communication facilities, fortifications, equipment, ammunition, and supplies was to be the defense nucleus of MEDO.

Cairo declined to play the part of a local policeman with club and gun made in the United States, and book of instructions written in Washington and countersigned in London. The Egyptian government went further, repudiated its 1936 treaty with Great Britain and demanded that British armed forces withdraw from Egyptian soil.

London's reply to this demand was typical and in the accepted

pattern of 19th century imperialism. British armed forces in the Suez Canal Zone, which had numbered about 15,000, were rapidly increased to 80,000, with a corresponding concentration of military supplies.

Faced with this formidable threat of armed violence, the government of Egypt hesitated. Had the date been 1890 or even 1910, Cairo would have done what it could to save face, and would have capitulated. The world had changed by 1952. Egyptian military officers, led by Colonel Nasser, seized the government, forced King Farouk to abdicate and leave the country, and established a military dictatorship. Then they continued negotiations with London—in mid-20th century style.

The outcome of these negotiations (in which the United States played a decisive role by advocating Egyptian sovereignty and the withdrawal of foreign troops) was an agreement signed by representatives of Britain and Egypt on October 19, 1954, which provided that British armed forces must leave Egyptian soil within 20 months. On June 13, 1956, the last British soldier left Suez. Six weeks later, on July 26, Cairo declared the Suez Canal Egyptian national property.

Such a reversal of 19th-century relations would be sensational if it had occurred in Egypt alone. But the withdrawal from Egypt was one of a score of similar episodes, completed or in process in the former British, French, and Dutch colonies and protectorates throughout Asia and Africa.

British, and especially French, reactions to the nationalization of the Canal were again typical of the 19th century. French enthusiasts, having learned little in Indo-China and less in North Africa, were for shooting it out with the Nasser government. Britain began putting the country on a war basis, mobilizing reserves and concentrating armed forces and supplies in Cyprus and at other points adjacent to Suez.

Washington seems to have played the decisive role in bringing Paris and London up to date and securing an agreement to call representatives of 24 nations to a conference on August 16, under the auspices of "The Big Three"—Britain, France, and the United States—with Egypt and the Soviet Union also invited.

Egypt and Greece refused to attend the August 16 meeting. Moscow sent representatives; so did New Delhi. The Conference was dominated by the new "Big Three"—the United States, the Soviet Union, and the Republic of India. Like so many other meetings in this era of the cold war, the Conference split. Washington, its allies, satellites, and dependencies, mustered a majority of the 22 delegations in favor of appointing a committee, headed by Prime Minister Robert Menzies of Australia as Chairman and with delegates from Ethiopia,

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Iran, Sweden, and the United States, which would make arrangements for negotiating with the Nasser government concerning the future of the Suez Canal.

The New "Big Three"

This is the mid-20th century. Gunboat diplomacy is no longer the answer to weaker powers which challenge stronger ones. The "Big Three" of yesteryear are no longer the "Big Three" of world power politics today. At the same time the new "Big Three," their allies and associates, are not emancipated from the limiting follies of nationalism. No one of the interested parties in Suez is willing to take the issue to the United Nations and leave it there until it is dealt with internationally. Deliberately and persistently, the powers most immediately involved have held the matter in their own hands, thus avoiding an appeal to world authority.

Cairo desires to keep the issue "national," with Egypt maintaining a monopoly of an international waterway and thus augmenting its power-prestige position.

Neither the United States nor the Soviet Union is prepared to have waterways used by many nations handed over to an International Waterways Authority, responsible to the United Nations.

The Panama Canal, which to date is a United States monopoly, makes Washington particularly touchy on the problem of international waterways. As far as Suez was concerned, Secretary Dulles stated (news conference of August 28) that "the purpose ought to be to insulate the operation of this canal in its technical aspects from the political policies of any state." In this connection, Secretary Dulles asserted, the United Nations has "a measure of responsibility." As to the nature of this responsibility and its operational base in the United Nations, the Secretary was deliberately vague.

Questioned at the same news conference on the Panama Canal, Secretary Dulles pointed out that there are two important differences between the Suez and Panama Canals. Legally, the Secretary said, "The Suez Canal by the Treaty of 1888 is internationalized. The Panama Canal is a waterway in a zone where by treaty the United States has all the rights which it would possess if it were the sovereign. . . . There is no international treaty giving other countries any rights at all in the Panama Canal" (with one minor exception concerning toll charges which Mr. Dulles mentioned).

Practically, Secretary Dulles continued, there are "a large number of countries whose very livelihood almost depends upon the free and efficient and impartial operation of the Suez canal," whereas "no country anywhere in the world fears that its economy is jeopardized by possible misuse, abuse, of our rights in the Panama Canal."

This reference to the Panama Canal brought a quick rejoinder from the Panama Foreign Minister who declared that Panama had *not* transferred sovereignty over the Panama Canal Zone, but had granted to the United States only "certain powers exclusively for the purpose of the Canal and nothing else." The treaty of 1903, said Señor Boyd, "does not grant the United States sovereignty over the Canal Zone."

The Suez Canal crisis, like so many of its predecessor crises, is being handled, not by a duly constituted international authority, but by a vigilante group of representatives from nations hand-picked for the occasion by Washington, London, and Paris. The London Conference of August 16, 1956, was not associated in any way with the United Nations and had no international legal authority. It was the outcome of a practice which President Roosevelt and Prime Minister Churchill initiated at the Atlantic Conference of 1941, to which representatives of only the "Big Two" were invited.

There was a shadow of excuse for the 1941 Atlantic Conference—war necessity. That excuse is absent today. It is high time for the nations who value world peace and security to turn their attention from NATO, SEATO, ANZUS, the Association of American States, and other local and extra-legal organizations and concentrate their efforts on building up a world authority capable of maintaining equal world justice under world law.

Foreign Aid With "Strings"

Washington's foreign aid, in theory, is without political strings. In practice, foreign aid is a political weapon of first-rate importance.

Of all foreign aid, technical assistance would seem to be farthest removed from political associations. Increased water supplies, health measures, expansion of educational facilities, and improvements in the farming techniques of a relatively undeveloped country should depend on local needs rather than the give and take of blue-chip power politics.

Over against such arguments in favor of foreign aid and particularly technical assistance, without strings, Washington's International Co-operation Administration announced, on August 23, 1956, that it "would not send new men to Egypt or begin new aid projects in that country until the Suez Canal crisis was over." ICA explained that it normally sends about five technicians per month to Cairo. Technicians ready for transfer to Egypt have been given extended home leave. Meanwhile, technical assistance to Egypt hangs in the air, awaiting political developments. This is foreign aid with ropes.

We Are "Free"!

Henry A. Kissinger, of the Council on Foreign Relations and Harvard University, writing on "Force and Diplomacy in the Nuclear Age" (*Foreign Affairs*, April, 1956, p. 356) notes that in the period before the French Revolution "not even the most absolute ruler by the grace of God could think of conscripting his subjects or of confiscating their property."

Surely that was a Golden Age when people were "feudal." We are "free democracies," with conscription and confiscation accepted as a matter of course.

Social Science and Freedom

The eighth in a series of annual public lectures on problems of current interest in the social sciences appeared under the title "Social Science and Freedom, a Report to the People." (Copies of the report are available on request from the Fund for the Republic, 10 E. 42 St., New York, N. Y.) The keynote lecture in the series, "Man's Struggle for Freedom against Authority," was delivered by John B. Wolf, Professor of History at the University of Minnesota.

"When I first considered the problem of man's struggle for freedom in relation to his institutions," said Professor Wolf, "it struck me that John Stuart Mill in his essay 'On Liberty' had probably already said everything that I might say and much better than I could hope to say it." However, the Professor continued, "I came upon a paradox that might contain an important addition to our understanding of the problem. The paradox is simply this: Man can seem to be free in any society, no matter how authoritarian, as long as he accepts the postulates of the society. But man can only be free in a society that is willing to allow its basic postulates to be questioned."

Thus there is set up an antithesis between the demand of thinkers for a free market place in ideas and the demands that each individual conform to the established and accepted community postulates, with the resulting uneasy opposition of freedom on one side and conformity on the other.

Freedom thus becomes one side of a social balance or equilibrium, shifting with every change in authority. Hence freedom is not absolute, but relative to the changing demands of an unstable social equilibrium.

One of the chief responsibilities of social science is to study and understand the freedom-authority equilibrium with one eye on the requirements of the individual and the other eye on the necessities of community survival and improvement.

Doing It Again

"We're swamped with houses," laments Bob Smith, an Orange County (California) builder. "Too many builders came in and industrial growth didn't keep pace." Mr. Smith has 49 unsold houses in "Harbor Park Estates," a 164-unit tract he finished last spring. They are price-tagged between \$13,625 and \$14,700.

The above paragraph from the front page of the *Wall Street Journal* of August 24, 1956, epitomizes a survey, by a staff reporter, of the housing situation in and near Los Angeles, California—the Number One home-building area in the nation's Number One defense against depression, house construction.

Ed Cony, staff reporter for the *Journal*, summed up his survey in this way:

In each of the past two years more than 105,000 new homes sprang up in burgeoning Los Angeles and Orange Counties here in Southern California. That's one house for every 13 built throughout the entire country, and more than were built in any state but California. This year, the building pace has slackened—but not soon enough.

Drive through some new developments here and you spot unsold houses standing bleak and empty among others that have been occupied for several months. Nearly a third of all newly-completed tract homes in Los Angeles County were unsold in June, a Federal Housing Administration survey showed. In neighboring Orange County to the southeast, 26 percent of the newly-built dwellings were still without buyers.

One Los Angeles expert put the situation into a sentence for Cony: "Builders just went hog wild." The same over-development that brought glut to Detroit's auto industry in 1955, has done the same disservice to the Los Angeles building industry in 1956. Sales of autos and new homes were two of the most important supports of the shaky 1953-1956 boom.

Sham Battle

August found the Republicans and the Democrats presenting to the public their carefully hand-picked candidates in elaborately stage-managed settings at Chicago and San Francisco. The result: President Eisenhower will head one ticket and Ex-Governor Stevenson will head the other. Both are rich men. Both are devoted to the American Way of Life.

Like identical twins, they differ chiefly in their temperaments. Basic issues which challenge western man, and in some instances threaten his very existence, will not enter a campaign which will deal chiefly in personalities as Tweedledee competes with Tweedledum for the United States presidency.

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MONTHLY REVIEW

(continued from inside back cover)

standard comparable to upper-class college courses. The lectures will be given by Paul Sweezy, and the subject will be American capitalism. Details of time, place, fees, and so on will be published at the earliest possible moment.

This experiment reflects the way we feel about the current situation in the American Left. There has been a good deal of off-the-record talk lately of the need for new organizations, and a good deal of mulling over past lapses and mistakes. On the whole, none of this strikes us as likely to be very fruitful under present conditions. We think the main job for the present is to attain a better understanding of the socio-economic system of our own country, and we would like to make as big a contribution as we can toward that end. If the response to the Sweezy lectures is favorable enough, we shall consider ways and means of expanding MRA's educational program in future years.

We have been asked to announce that an anthology of the poetry of the Rosenberg case in the United States will be published next spring. If you have or know of any poems that you think should be considered for inclusion, please send them before January 1st to Sierra Press, P. O. Box 96, Long Island City 4, New York.

Here is our favorite letter of the month: "A Revolutionary Formula" by Alexander Crosby [in the September issue] is the most delicious morsel I have gulped down in years. Repeatedly it has brought tears of laughter to the eyes of an 86-year-old cripple, given him renewed hope, made him wish to live on and on. Should Mr. Crosby ever visit S——, I hope he will come to my shack. Under his inspiration I will sit down at my piano and compose an original musical setting to immortalize his, 'Oh, say can you write/ To your mother tonight?' My cat, Sir Thomas Aquinas, joins me in thanks to Mr. Crosby." And the editors want in on that, too. Alex Crosby has a touch that has been too long absent from American radical writing, and we hope that he will appear much more often in the pages of MR in the months and years to come.

We recently received a review copy of a side-splitting little mimeographed booklet which deserves a wider circulation in the American Left. Entitled "Lifeitselfmanship or How to Become a Precisely Because Man: An Investigation into Current L (or Left-wing) Usage," it is by Decca Truchhaft and can be obtained from the author (574 - 61st St., Oakland, California) at 50¢ per copy plus 10¢ postage. Very few of us are completely guiltless of the kind of linguistic horror here exposed by Mrs. Truchhaft, and a little good-natured spoofing may be the best way of bringing the fact to the attention of the Left.

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(continued from inside front cover)

warming indications that MR has many staunch and steadfast friends. There were, for example, the two ladies who climbed three flights of stairs in order to get their generous contributions in the very day they received the appeal. And nearly every mail brings letters like the enclosed from an old friend in Boston: "Enclosed find \$6 to help MR. I am on old age assistance and this is all I can afford." If only all readers would emulate this example and give all they can afford, we would beat last year's record many times over and not by a mere seven percent. Come to think of it, how about you? Have you joined the Associates? Have you given as much as you can afford?

We continue to receive appreciative messages concerning our special 64-page July-August issue on the Soviet Union. It brought in more new subscribers than any previous single issue, and, as we reported in this space last month, we were obliged to reprint for the first time in MR's history. Thanks to this fact, we have enough copies on hand to send out samples to your friends *who are potential subscribers*. The italicized words are important: we want subscriptions to come from this mailing, so please send in only the names and addresses of people who you really think would be interested in subscribing. And please follow up by speaking to, phoning, or writing every individual to whom copies are to be sent. We are not exactly ardent admirers of Madison Avenue selling techniques, but of one thing long experience has convinced us: the personal follow-up is of the utmost importance. If you want copies to distribute yourself, they can still be obtained at 50¢ each, five for \$2.

The Great Road by Agnes Smedley will be published on October 15th. On that date, our special pre-publication price of \$4.50 expires and the price jumps to \$6.75, while the combination book-and-sub offer goes up from \$7 to \$9. Save money by ordering now.

And while we're on this subject, we may as well make an announcement which gives us no more pleasure than it does you. Increasing costs have finally forced us to take a step which most other magazines took long ago and which we have been postponing for three years because so large a proportion of our subscribers live on meager incomes, many of them on the totally inadequate old-age pensions which are paid by this, the richest country in the world. As of January 1, 1957, the regular subscription rate for MR will go up from \$3 to \$4 for one year, from \$5 to \$7 for two years. We take this step regretfully, but with costs rising generally we can see no way to put it off longer. But please note that *up to January 1 you can renew for as many years ahead as you care to at the old rate*, regardless of when your present sub expires. Prices for three or more years can be calculated by adding to the basic \$5-rate for two years, \$3 for each year in excess of two. We hope that you will want to renew through the Associates, of course, but in any case we hope that you will renew for as far ahead as you can afford before the end of the year.

Present plans call for Leo Huberman to leave on October 10th for a long trip to Europe and Asia in the course of which he will spend several months in India as the guest of the Indian Institute of Statistics, which is closely associated with India's planning activities. He will return via Japan in April and expects to lecture in Los Angeles, San Francisco, and Chicago toward the end of that month on the way back to New York.

We have decided to try an experiment as a part of the Associates program during the coming winter. In past years, MRA has sponsored meetings with a number of different speakers. This year, we are going to try offering a series of six lectures—two each in January, February, and March—of a

[continued on page 224]

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